

## Tables

(Table 7.1) Radiocarbon dates from the outer peat

| Material | Lab. Ref | Result (years BP) | Height (metres OD) |
|----------|----------|-------------------|--------------------|
| wood     | HAR-5642 | 4840 ± 70         | -1.0               |
| peat     | HA-6363  | 5190 ± 80         | —                  |
| peat     | HAR-5640 | 5200 ± 120        | -2.1               |
| wood     | HAR-5631 | 6100 ± 100        | -2.0               |
| wood     | HAR-5630 | 5630 ± 80         | -2.0               |
| peat     | HAR-5641 | 5740 ± 100        | -2.2               |

(Table 9.1) Fossil molluscs from the Chadbrick Gravel

| Species                                | Number | Percentage |
|--|--------|------------|
| <i>Valvata cristata</i> (Müller)       | 1      | 0.4        |
| <i>Valvata piscinalis</i> (Müller)     | 88     | 35.5       |
| <i>Bithynia tentaculata</i> (Linné)    | 24     | 9.6        |
| <i>Physa fontinalis</i> (Linné)        | 1      | 0.4        |
| <i>Lymnaea stagnalis</i> (Linné)       | 1      | 0.4        |
| <i>Lymnaea peregra</i> (Müller)        | 41     | 16.5       |
| <i>Planorbis</i> spp.                  | 2      | 0.8        |
| <i>Gyraulus laevis</i> (Alder)         | 7      | 2.8        |
| <i>Ancylus fluviatilis</i> (Müller)    | 1      | 0.4        |
| <i>Unio</i> sp.                        | 3      | 1.2        |
| <i>Corbicula fluminalis</i> (Müller)   | 18     | 7.3        |
| ? <i>Sphaerium</i> sp.                 | 1      | 0.4        |
| <i>Pisidium amnicum</i> (Müller)       | 9      | 3.6        |
| <i>Pisidium clessini</i> Neumayr       | 5      | 2.0        |
| <i>Pisidium henslowanum</i> (Sheppard) | 5      | 2.0        |
| <i>Pisidium nitidum</i> Jenyns         | 1      | 0.4        |
| <i>Pisidium subtruncatum</i> Maim      | 4      | 1.6        |
| <i>Pisidium</i> spp.                   | 22     | 8.9        |
| <i>Oxyloma</i> cf. <i>pfeifferi</i>    | 5      | 2.0        |
| <i>Cochlicopa</i> cf. <i>lubrica</i>   | 1      | 0.4        |
| <i>Vallonia</i> cf. <i>pukhella</i>    | 1      | 0.4        |
| <i>Discus rotundatus</i> (Müller)      | 1      | 0.4        |
| ? <i>Helicella</i> sp.                 | 1      | 0.4        |
| <i>Trichia</i> cf. <i>hispida</i>      | 6      | 2.4        |
| Total                                  | 248    |            |

(Table 10.1) Fossil molluscs from three profiles through the interglacial channel-fill at Kennpier Footbridge (after Gilbertson and Hawkins, 1978a)

| Species                             | KPA | Profiles KPB | KPD |
|-------------------------------------|-----|--------------|-----|
| <b>Marine</b>                       |     |              |     |
| <i>Littorina littorea</i> (Linné)   | 3   | —            | 1   |
| <i>Littorina saxatilis</i> (Olivi)  | 1   | —            | —   |
| <i>Littorina littoralis</i> (Linné) | 5   | 1            | ■   |
| <i>Littorina</i> spp.               | 13  | 1            | 2   |
| <i>Retusa</i> sp.                   | —   | —            | 1   |
| <i>Nucella lapillus</i> (Linné)     | 3   | —            | —   |

|  |      |      |       |
|--|------|------|-------|
| <i>Ostrea</i> sp.                              | 1    | —    | 2     |
| <i>Cerastoderma</i> spp.                       | 2    | —    | frags |
| <i>Macoma balthica</i> (Linné)                 | 36   | 1    | 16    |
| <b>Land and freshwater</b>                     |      |      |       |
| <i>Valvata piscinalis</i> (Müller)             | 127  | 72   | 423   |
| <i>Belgrandia marginata</i><br>(Michaud)       | 14   | —    | 13    |
| <i>Bithynia tentaculata</i> (Linné)<br>shells  | 3    | —    | 4     |
| <i>Bithynia tentaculata</i> (Linn)<br>opercula | 1092 | 3579 | 5619  |
| <i>Lymnaea peregra</i> (Müller)                | 12   | —    | 65    |
| <i>Anisus leucostoma</i> Müller                | —    | —    | 1     |
| <i>Gyraulus laevis</i> Alder                   | 4    | —    | 1     |
| <i>Armiger crista</i> (Linné)                  | 1    | —    | 1     |
| <i>Planorbis</i> spp.                          | —    | —    | 1     |
| <i>Ancylus fluviatilis</i> Müller              | 2    | —    | —     |
| <i>Trichla htspida</i> (Linné)                 | —    | —    | 15    |
| <i>Zonitoides nitidus</i> (Müller)             | —    | —    | 1     |
| <i>Agrolimax cf. agrestis</i> (Linné)          | 70   | 70   | 128   |
| <i>Agrolimax cf. reticulatus</i><br>(Müller)   | 30   | 43   | 35    |
| <i>Agrolimax cf. laevis</i> (Müller)           | 6    | —    | 22    |
| <i>Agrolimax</i> spp.                          | 65   | 56   | 162   |
| <i>Corbicula fluminalis</i> (Müller)           | —    | 20   | 24    |
| <i>Pisidium amnicum</i> (Müller)               | 4    | 6    | 7     |
| <i>Pisidium obtusale</i> (Lamarck)             | —    | —    | 1     |
| <i>Pisidium subtruncatum</i> Malm              | 5    | —    | 1     |
| <i>Pisidium henslowanum</i><br>(Sheppard)      | 1    | —    | —     |
| <i>Pisidium nitidum</i> Jenyns                 | 5    | —    | 1     |
| <i>Pisidium moitessierianum</i>                | —    | —    | 1     |
| Paladilhe                                      |      |      |       |
| <i>Pisidium</i> spp.                           | 13   | 4    | 13    |
| Total  | 1560 | 3854 | 6564  |

(Table 10.2) Fossil molluscs from the interglacial deposit at Yew Tree Farm (after Gilbertson and Hawkins, 1978a)

| Species                                      | Number |
|--|--------|
| <i>Valvata cristata</i> Müller               | 12     |
| <i>Valvata piscinalis</i> (Müller)           | 3324   |
| <i>Beigrandia marginata</i> (Michaud)        | 970    |
| <i>Bithynia tentaculata</i> (Linné) shells   | 1039   |
| <i>Bithynia tentaculata</i> (Linné) opercula | 1755   |
| <i>Carychium minimum</i> Müller              | 2      |
| <i>Lymnaea truncatula</i> (Müller)           | 192    |
| <i>Lymnaea palustris</i> (Müller)            | 1      |
| <i>Lymnaea peregra</i> (Müller)              | 886    |
| <i>Planorbis planorbis</i> (Linné)           | 25     |
| <i>Anisus vorticulus</i> Troschel            | 147    |
| <i>Anisus leucostoma</i> Müller              | 141    |
| <i>Gyraulus laevis</i> Alder                 | 1613   |

|   |        |
|---|--------|
| <i>Armiger crista</i> (Linné)                   | 615    |
| <i>Planorbis</i> spp.                           | 3      |
| <i>Hippentis complanata</i> (Linné)             | 21     |
| <i>Acroloxus lacustris</i> (Linné)              | 8      |
| <i>Oxyloma</i> cf. <i>pfeifferi</i> Rossmässler | 6      |
| <i>Cochlicopa lubrica</i> (Müller)              | 2      |
| <i>Pupilla muscorum</i> (Linné)                 | 2      |
| <i>Vallonia costata</i> (Müller)                | 4      |
| <i>Vallonia puicella</i> (Müller)               | 6      |
| <i>Vallonia</i> spp.                            | 1      |
| <i>Cepaea nemoralis</i> (Linné)                 | 1      |
| <i>Trichia bispida</i> (Linné)                  | 3      |
| <i>Punctum pygmaeum</i> Draparnaud              | 1      |
| <i>Zonitoides nitidus</i> (Müller)              | 4      |
| <i>Agrolimax</i> cf. <i>agrestis</i> (Linné)    | 6      |
| <i>Agrolimax</i> spp.                           | 42     |
| <i>Spbaerium corneum</i> (Linné)                | 1      |
| <i>Corbicula fluminalis</i> (Müller)            | 72     |
| <i>Pisidium amnicum</i> (Müller)                | 44     |
| <i>Pisidium casertanum</i> (Poli)               | 7      |
| <i>Pisidium obtusale</i> (Lamarck)              | 10     |
| <i>Pisidium milium</i> Held                     | 56     |
| <i>Pisidium subtruncatum</i> Malm               | 138    |
| <i>Pisidium benslowanum</i> (Sheppard)          | 24     |
| <i>Pisidium nitidum</i> Jenyns                  | 270    |
| <i>Pisidium pulchellum</i> Jenyns               | 2      |
| <i>Pisidium moitessierianum</i> Paladilhe       | 3      |
| <i>Pisidium</i> spp.                            | 190    |
| Total   | 11 649 |

(Table 10.3) Molluscs from the interglacial deposit at Kenn Church (after Gilbertson, 1974; Gilbertson and Hawkins, 1978a)

| Sample                       | A   | B   | C   | D   | E   | G   | J | O            |
|------------------------------|-----|-----|-----|-----|-----|-----|---|--------------|
| Sample depth (m)             | 2.7 | 2.2 | 1.7 | 1.5 | 1.2 | 0.8 |   | unstratified |
| <b>Marine/estuarine taxa</b> |     |     |     |     |     |     |   |              |
| <i>Patella</i>               |     |     |     |     |     |     |   |              |
| <i>vulgata</i> Linné         |     |     |     |     |     | 2   |   |              |
| <i>Gibbula</i> sp.           |     |     |     |     |     |     | 1 |              |
| <i>Littorina</i>             |     |     |     |     |     |     |   |              |
| <i>littorea</i> (Linné)      | 1   |     |     |     |     |     | 2 |              |
| <i>saxatilis</i> (Olivi)     | 2   |     |     |     |     |     | 1 |              |
| <i>littoralis</i> (Linné)    | 1   |     |     |     | 1   | 1   |   |              |
| <i>Littorina</i> sp.         | 2f  | f   | 2f  | 1f  |     | f   | f | f            |

|                       |     |     |     |    |    |     |     |
|-----------------------|-----|-----|-----|----|----|-----|-----|
| <i>Nucella</i>        |     |     |     |    |    |     |     |
| <i>lapillus</i>       |     |     |     |    |    | 1   | 2   |
| (Linné)               |     |     |     |    |    |     |     |
| <i>Ocenebra</i>       |     |     |     |    |    |     |     |
| <i>erinacea</i>       |     |     |     |    | 1  | 1   |     |
| (Linné)               |     |     |     |    |    |     |     |
| <i>Buccinum</i>       |     |     |     |    |    |     |     |
| <i>undatum</i>        |     |     |     |    |    | 1   | 3   |
| (Linné)               |     |     |     |    |    |     |     |
| <i>Nassarius</i>      |     |     |     |    |    |     |     |
| <i>reticulatus</i>    |     |     |     |    |    | 1   |     |
| (Linné)               |     |     |     |    |    |     |     |
| <i>Cerastoderma</i>   | 3f  | 8f  | 1f  | f  | f  | f   | if  |
| spp.                  |     |     |     |    |    |     |     |
| <i>Macoma</i>         |     |     |     |    |    |     |     |
| <i>balthica</i>       | 7f  | 16f | 23f | 2f | 6f | 90f | 50f |
| (Linné)               |     |     |     |    |    |     |     |
| <b>Brackish-water</b> |     |     |     |    |    |     |     |
| <b>taxa</b>           |     |     |     |    |    |     |     |
| <i>Hydrobia</i>       |     |     |     |    |    |     |     |
| <i>ventrosa</i>       | 163 | 125 | 16  | 2  | 1  |     |     |
| Montagu               |     |     |     |    |    |     |     |
| <i>Hydrobia</i>       |     |     |     |    |    |     |     |
| <i>ulvae</i>          | 103 | 75  | 19  | 4  | 2  | 1   |     |
| (Pennant)             |     |     |     |    |    |     |     |
| Freshwater            |     |     |     |    |    |     |     |
| taxa                  |     |     |     |    |    |     |     |
| <i>Valvata</i>        |     |     |     |    |    |     |     |
| <i>piscinalis</i>     | 6   | 2   |     |    |    |     |     |
| (Müller)              |     |     |     |    |    |     |     |
| <i>Belgrandia</i>     |     |     |     |    |    |     |     |
| <i>marginate</i>      | 1   |     |     |    |    |     |     |
| (Michaud)             |     |     |     |    |    |     |     |
| <i>Bithynia</i>       |     |     |     |    |    |     |     |
| <i>tentaculata</i>    | 3   |     |     |    |    |     |     |
| (Linné)               |     |     |     |    |    |     |     |
| <i>Lymnaea</i>        |     |     |     |    |    |     |     |
| <i>peregra</i>        | 20  | 14  | 5   |    |    |     |     |
| (Müller)              |     |     |     |    |    |     |     |
| <i>Planorbis</i>      |     |     |     |    |    |     |     |
| <i>planorbis</i>      | 1   | 2   |     |    |    |     |     |
| (Linné)               |     |     |     |    |    |     |     |
| <i>Anisus</i>         |     |     |     |    |    |     |     |
| <i>vorticulus</i>     | 2   |     |     |    |    |     |     |
| Troschel              |     |     |     |    |    |     |     |
| <i>Gyraulus</i>       |     |     |     |    |    |     |     |
| <i>laevis</i> (Alder) | 11  | 15  | 1   |    |    |     |     |
| <i>Corbicula</i>      |     |     |     |    |    |     |     |
| <i>fluminalis</i>     |     |     |     |    | 2  |     |     |
| (Müller)              |     |     |     |    |    |     |     |

*Pisidium*  
*subtruncatum* 1  
Malm  
*Pisidium*  
*nitidum* 1  
Jenyns  
*Pisidium*  
*moitessierianum*  
Paladilhe  
*Pisidium* spp. 2

**Terrestrial**

**taxa**

*Vallonia*  
*pulchella* 1  
(Müller)  
*Vallonia*  
*enniensis* 1  
(Gredler)  
*Trichia*  
*striolata* 1  
Pfeiffer  
*Helicella*  
*virgata* (Da  
Costa)  
*Discus*  
*rotundatus*  
(Müller)

**References**

| Species                                      | KPA  | Profiles |       |
|--|------|----------|-------|
|  |      | KPB      | KPD   |
| <b>Marine</b>                                |      |          |       |
| <i>Littorina littorea</i> (Linné)            | 3    | -        | 1     |
| <i>Littorina saxatilis</i> (Olivi)           | 1    | -        | -     |
| <i>Littorina littoralis</i> (Linné)          | 5    | 1        | -     |
| <i>Littorina</i> spp.                        | 13   | 1        | 2     |
| <i>Retusa</i> sp.                            | -    | -        | 1     |
| <i>Nucella lapillus</i> (Linné)              | 3    | -        | -     |
| <i>Ostrea</i> sp.                            | 1    | -        | 2     |
| <i>Cerastoderma</i> spp.                     | 2    | -        | frags |
| <i>Macoma balthica</i> (Linné)               | 36   | 1        | 16    |
| <b>Land and freshwater</b>                   |      |          |       |
| <i>Valvata piscinalis</i> (Müller)           | 127  | 72       | 423   |
| <i>Belgrandia marginata</i> (Michaud)        | 14   | -        | 13    |
| <i>Bithynia tentaculata</i> (Linné) shells   | 3    | -        | 4     |
| <i>Bithynia tentaculata</i> (Linné) opercula | 1092 | 3579     | 5619  |
| <i>Lymnaea peregra</i> (Müller)              | 12   | -        | 65    |
| <i>Anisus leucostoma</i> Müller              | -    | -        | 1     |
| <i>Gyraulus laevis</i> Alder                 | 4    | -        | 1     |
| <i>Armiger crista</i> (Linné)                | 1    | -        | 1     |
| <i>Planorbis</i> spp.                        | -    | -        | 1     |
| <i>Ancylus fluviatilis</i> Müller            | 2    | -        | -     |
| <i>Tricbla hispida</i> (Linné)               | -    | -        | 15    |
| <i>Zonitoides nitidus</i> (Müller)           | -    | -        | 1     |
| <i>Agrolimax cf. agrestis</i> (Linné)        | 70   | 70       | 128   |
| <i>Agrolimax cf. reticulatus</i> (Müller)    | 30   | 43       | 35    |
| <i>Agrolimax cf. laevis</i> (Müller)         | 6    | -        | 22    |
| <i>Agrolimax</i> spp.                        | 65   | 56       | 162   |
| <i>Corbicula fluminalis</i> (Müller)         | -    | 20       | 24    |
| <i>Pisidium amnicum</i> (Müller)             | 4    | 6        | 7     |
| <i>Pisidium obtusale</i> (Lamarck)           | -    | -        | 1     |
| <i>Pisidium subtruncatum</i> Malm            | 5    | -        | 1     |
| <i>Pisidium benslowanum</i> (Sheppard)       | 1    | -        | -     |
| <i>Pisidium nitidum</i> Jenyns               | 5    | -        | 1     |
| <i>Pisidium mottezierianum</i> Paladilhe     | -    | -        | 1     |
| <i>Pisidium</i> spp.                         | 13   | 4        | 13    |
| Total  | 1560 | 3854     | 6564  |

(Table 10.1) Fossil molluscs from three profiles through the interglacial channel-fill at Kennpier Footbridge (after Gilbertson and Hawkins, 1978a).

| <i>Species</i>                                  | <i>Number</i> |
|---|---------------|
| <i>Valvata cristata</i> Müller                  | 12            |
| <i>Valvata piscinalis</i> (Müller)              | 3324          |
| <i>Belgrandia marginata</i> (Michaud)           | 970           |
| <i>Bitbynia tentaculata</i> (Linné) shells      | 1039          |
| <i>Bitbynia tentaculata</i> (Linné) opercula    | 1755          |
| <i>Carychium minimum</i> Müller                 | 2             |
| <i>Lymnaea truncatula</i> (Müller)              | 192           |
| <i>Lymnaea palustris</i> (Müller)               | 1             |
| <i>Lymnaea peregra</i> (Müller)                 | 886           |
| <i>Planorbis planorbis</i> (Linné)              | 25            |
| <i>Anisus vorticulus</i> Troschel               | 147           |
| <i>Anisus leucostoma</i> Müller                 | 141           |
| <i>Gyraulus laevis</i> Alder                    | 1613          |
| <i>Armiger crista</i> (Linné)                   | 615           |
| <i>Planorbis</i> spp.                           | 3             |
| <i>Hippentis complanata</i> (Linné)             | 21            |
| <i>Acroloxus lacustris</i> (Linné)              | 8             |
| <i>Oxyloma</i> cf. <i>pfeifferi</i> Rossmässler | 6             |
| <i>Cochlicopa lubrica</i> (Müller)              | 2             |
| <i>Pupilla muscorum</i> (Linné)                 | 2             |
| <i>Vallonia costata</i> (Müller)                | 4             |
| <i>Vallonia pulchella</i> (Müller)              | 6             |
| <i>Vallonia</i> spp.                            | 1             |
| <i>Cepaea nemoralis</i> (Linne)                 | 1             |
| <i>Tricbia bispida</i> (Linne)                  | 3             |
| <i>Punctum pygmaeum</i> Draparnaud              | 1             |
| <i>Zonitoides nitidus</i> (Müller)              | 4             |
| <i>Agrolimax</i> cf. <i>agrestis</i> (Linne)    | 6             |
| <i>Agrolimax</i> spp.                           | 42            |
| <i>Sphaerium corneum</i> (Linne)                | 1             |
| <i>Corbicula fluminalis</i> (Müller)            | 72            |
| <i>Pisidium amnicum</i> (Müller)                | 44            |
| <i>Pisidium casertanum</i> (Poli)               | 7             |
| <i>Pisidium obtusale</i> (Lamarck)              | 10            |
| <i>Pisidium milium</i> Held                     | 56            |
| <i>Pisidium subtruncatum</i> Malm               | 138           |
| <i>Pisidium benslowianum</i> (Sheppard)         | 24            |
| <i>Pisidium nittidum</i> Jenyns                 | 270           |
| <i>Pisidium pulchellum</i> Jenyns               | 2             |
| <i>Pisidium motessierianum</i> Paladilhe        | 3             |
| <i>Pisidium</i> spp.                            | 190           |
| Total   | 11 649        |

(Table 10.2) Fossil molluscs from the interglacial deposit at Yew Tree Farm (after Gilbertson and Hawkins, 1978a).

| Sample                                     | A   | B   | C   | D   | E   | G   | J            | O   |
|--|-----|-----|-----|-----|-----|-----|--------------|-----|
| Sample depth (m)                           | 2.7 | 2.2 | 1.7 | 1.5 | 1.2 | 0.8 | unstratified |     |
| <b>Marine/estuarine taxa</b>               |     |     |     |     |     |     |              |     |
| <i>Patella vulgata</i> Linné               |     |     |     |     |     | 2   |              |     |
| <i>Gibbula</i> sp.                         |     |     |     |     |     |     | 1            |     |
| <i>Littorina littorea</i> (Linné)          | 1   |     |     |     |     |     | 2            |     |
| <i>Littorina saxatilis</i> (Olivier)       | 2   |     |     |     |     |     | 1            |     |
| <i>Littorina littoralis</i> (Linné)        | 1   |     |     |     | 1   | 1   |              |     |
| <i>Littorina</i> sp.                       | 2f  | f   | 2f  | 1f  |     | f   | f            | f   |
| <i>Nucella lapillus</i> (Linné)            |     |     |     |     |     |     | 1            | 2   |
| <i>Ocenebra erinacea</i> (Linné)           |     |     |     |     |     | 1   | 1            |     |
| <i>Buccinum undatum</i> (Linné)            |     |     |     |     |     |     | 1            | 3   |
| <i>Nassarius reticulatus</i> (Linné)       |     |     |     |     |     |     | 1            |     |
| <i>Cerastoderma</i> spp.                   | 3f  | 8f  | 1f  | f   |     | f   | f            | 1f  |
| <i>Macoma balthica</i> (Linné)             | 7f  | 16f | 23f | 2f  |     | 6f  | 90f          | 50f |
| <b>Brackish-water taxa</b>                 |     |     |     |     |     |     |              |     |
| <i>Hydrobia ventrosa</i> Montagu           | 163 | 125 | 16  | 2   |     | 1   |              |     |
| <i>Hydrobia ulvae</i> (Pennant)            | 103 | 75  | 19  | 4   |     | 2   | 1            |     |
| <b>Freshwater taxa</b>                     |     |     |     |     |     |     |              |     |
| <i>Valvata piscinalis</i> (Müller)         | 6   | 2   |     |     |     |     |              |     |
| <i>Belgrandia marginata</i> (Michaud)      | 1   |     |     |     |     |     |              |     |
| <i>Bithynia tentaculata</i> (Linné)        | 3   |     |     |     |     |     |              |     |
| <i>Lymnaea peregra</i> (Müller)            | 20  | 14  | 5   |     |     |     |              |     |
| <i>Planorbis planorbis</i> (Linné)         | 1   | 2   |     |     |     |     |              |     |
| <i>Anisus vorticulus</i> Troschel          | 2   |     |     |     |     |     |              |     |
| <i>Gyraulus laevis</i> (Alder)             | 11  | 15  | 1   |     |     |     |              |     |
| <i>Corbicula fluminalis</i> (Müller)       |     |     |     |     |     | 2   |              |     |
| <i>Pisidium subtruncatum</i> Malm          | 1   |     |     |     |     |     |              |     |
| <i>Pisidium ntidum</i> Jenyns              | 1   |     |     |     |     |     |              |     |
| <i>Pisidium molteessierianum</i> Paladilhe | 1   |     |     |     |     |     |              |     |
| <i>Pisidium</i> spp.                       | 2   | 2   |     |     |     |     |              |     |
| <b>Terrestrial taxa</b>                    |     |     |     |     |     |     |              |     |
| <i>Vallonia pulchella</i> (Müller)         | 1   |     |     |     |     |     |              |     |
| <i>Vallonia enniensis</i> (Gredler)        |     | 1   |     |     |     |     |              |     |
| <i>Trichia striolata</i> Pfeiffer          | 1   |     |     |     |     |     |              |     |
| <i>Helicella virgata</i> (Da Costa)        |     |     |     |     |     | 1   |              |     |
| <i>Discus rotundatus</i> (Müller)          |     |     |     |     |     | 1   |              |     |

(Table 10.3) Molluscs from the interglacial deposit at Kenn Church (after Gilbertson, 1974; Gilbertson and Hawkins, 1978a).